

APPENDIX A: REGIONAL TRAVEL DEMAND MODELING

Syracuse Road

Traffic Analysis

September 2005

HORROCKS

ENGINEERS

A. Introduction

This report presents the findings and recommendations of a traffic impact analysis for State Route (SR) 108 (Syracuse Road, 1700 South, or Antelope Drive) in Syracuse, Utah (see Figure 1 for project location).

The Wasatch Front Urban Area has experienced rapid growth over the last several decades. The portion of North Davis County, which is between I-15 and the Great Salt Lake continues to experience this growth. The communities of Syracuse, Layton, West Point, Clearfield, and Clinton are experiencing the challenges that arise in transitioning from rural farming communities to suburban communities.



Figure 1 - Project Location

Syracuse Road functions as the primary east-west corridor in this portion of Davis County and provides a connection of I-15 with Antelope Island in the Great Salt Lake. This road has recently been reconstructed to provide a five-lane section (two lanes in each direction with a center turn lane) from 1000 West in Syracuse, through southern Clearfield to an interchange with Interstate 15, in western Layton.

Syracuse City has grown from approximately 4,781 people in 1990 to nearly 9,398 in 2000 and expects to reach a population of over 26,000 by 2030. The growth of the city will result in continued growth in the travel demand on the transportation system including Syracuse Road. Other cities in the area are expected to continue to grow through 2030, with projected growth rates ranging from 0.6 percent to 2.4 percent.

Traffic congestion is occurring between 1000 West and 2000 West on Syracuse Road. Currently, between 1000 West and 2000 West, Syracuse Road has two travel lanes (one in each direction), some curb and gutter, and segmented sidewalk. Adjacent property use includes residential, institutional, commercial, and farmland.

The current (2004) average daily traffic volumes on Syracuse Road are:

<u>ADT</u>	<u>From</u>	<u>To</u>
21,000 vehicles	Main Street	1000 West
18,000 vehicles	1000 West	2000 West
9,000 vehicles	2000 West	3000 West

Figure 2 shows the daily traffic volumes in the vicinity of the project.

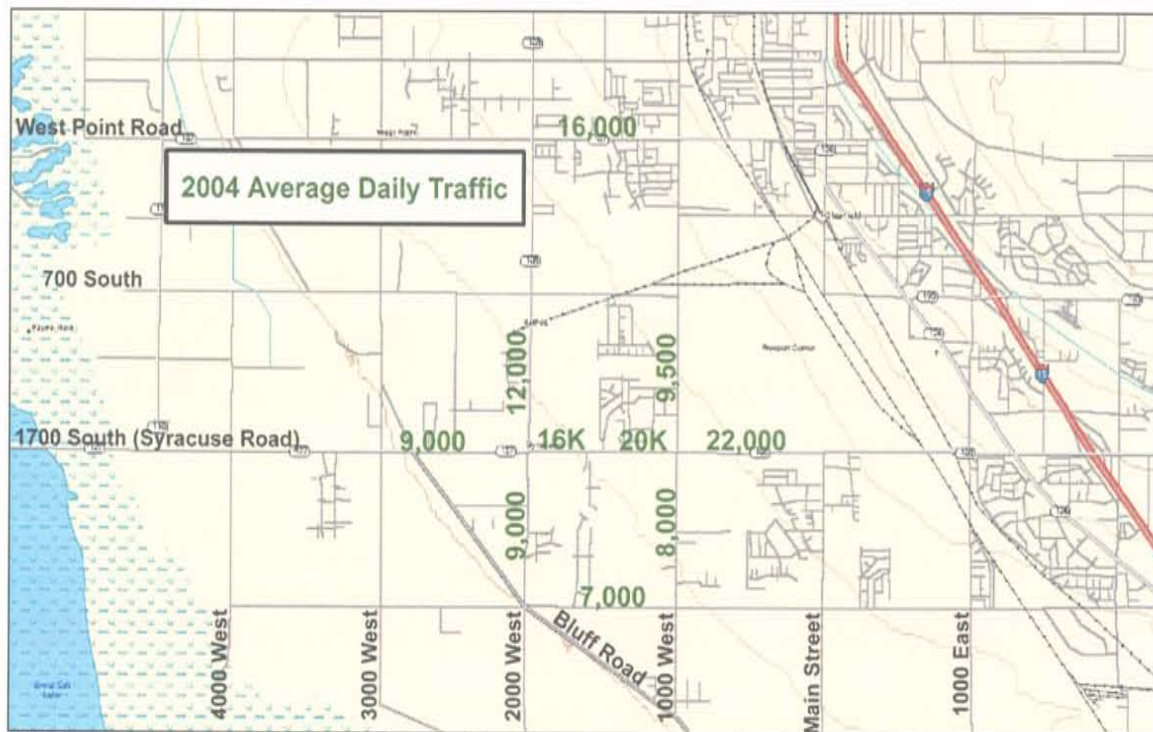


Figure 2 - 2004 Average Daily Traffic Volumes

The capacity of a two-lane suburban arterial roadway is approximately 12,000 vehicles per day. As shown above, the study roadway (Syracuse Road from 1000 West to 2000 West) currently carries traffic volumes that exceed the capacity of a two-lane arterial road. Therefore, Syracuse Road from 1000 West to 2000 West exceeds the capacity, resulting in severe congestion (often referred to as failing operating conditions and failing acceptable level of service) during peak travel periods.

The Utah Department of Transportation (UDOT), in conjunction with Syracuse City, proposes to make transportation related improvements to the Syracuse Road corridor between 1000 West and 2000 West to increase capacity and improve safety. A detailed traffic analysis was performed to determine the level of improvements needed to provide the appropriate capacity and safety for the current and future travel demand along the study corridor.

B. Traffic Analysis Scope

To determine the transportation needs along the study corridor, the traffic study evaluated the current and future traffic conditions on Syracuse Road from Main Street to 3000 West. Also, included in the traffic analysis are adjacent east/west roadways parallel to Syracuse Road:

<u>Roadway</u>	<u>From</u>	<u>To</u>
West Point Road (SR 107)	1000 West	3000 West
Gordon Avenue (2700 South)	1000 West	3000 West

North/south roadways included in the traffic analysis are:

<u>Roadway</u>	<u>From</u>	<u>To</u>
1000 West	West Point Road	Gordon Avenue
2000 West	West Point Road	Gordon Avenue

The traffic analysis evaluated study area under current (2004) conditions and future projected (2030) conditions for the following scenarios:

1. No Action or no roadway improvements
2. Transportation Systems Management (TSM) improvements only
3. Transit improvements only
4. Improving Syracuse Road to three-lanes
5. Improving Syracuse Road to five-lanes
 - a. On-Corridor Alignment
 - b. Off-Corridor Alignment
 - i. Shifted 275 feet south
 - ii. Shifted 600 feet south
6. Improving Syracuse Road to seven-lanes
7. Improving adjacent parallel roadways to five-lanes

Transportation improvements were identified as necessary to provide acceptable operating conditions within the study corridor.

C. Existing Conditions

The current traffic operating conditions were evaluated in the study corridor to accurately identify deficiencies. Traffic counts were performed along the corridor in April, 2004. Figure 2 above shows the daily traffic volumes in the study area.

Syracuse Road between 1000 West and 2000 West carries about 18,000 vehicles per day. The capacity of the existing roadway is less than 12,000 vehicles per day. Therefore, Syracuse Road in this section is operating less than acceptable.

Roadway operations are typically rated in terms of “Level of Service” (LOS). LOS is a term used by the *Highway Capacity Manual* (HCM) to describe the traffic operations of an intersection and/or roadway, based on congestion and delay. Level of Service is generally defined in ranges from LOS A (almost no congestion or delay) to LOS F (traffic demand is above capacity and the intersections experience long queues and delays). LOS C is generally considered acceptable for rural areas. LOS D is acceptable for urbanized areas. LOS E and F are the thresholds when the roadway/facility reaches capacity and traffic movement is slow and any disturbance/incident can cause long queues and increased travel delay.

For this traffic analysis, it is important to understand how Level of Service conditions work for intersections and roadways. At an intersection, Level of Service is based on delay time per vehicle. At signalized intersections the delay per vehicle is based on the control delay of the traffic signal, and at unsignalized (two-way or all-way stop controlled) intersections the delay is based on vehicle time spent waiting at the intersection in order to make the desired movement. Therefore, for the unsignalized intersections in this study, only the minor street approach with the highest delay will be reported. Again, both at signalized and unsignalized intersections, LOS A pertains to little to no congestion and/or delay, and LOS F being that traffic demand has exceeded the capacity of the intersection, with vehicles moving very slowly and/or stopped and where any disturbance/incident can cause long queues in the roadway and/or intersection, increasing travel delay. Tables 1 and 2 illustrate typical LOS conditions for the unsignalized and signalized intersection.

Table 1: Unsignalized Intersection Level of Service Conditions

LOS	Stop Delay per Vehicle (seconds)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Table 2: Signalized Intersection Level of Service Conditions

LOS	Stop Delay per Vehicle (seconds)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

For roadways, LOS conditions are typically calculated using capacities/demand values. Depending upon the type of roadway; ie freeway, two-lane or multi-lane highway, or urban arterial, and location; urban or rural, LOS is defined through the capacity of the roadway (vehicles per day or per lane per hour) and/or percentage of time-spent-following of vehicles in queues trying to pass slower moving vehicles, again, LOS E, as mentioned previously, being the

threshold when the roadway reaches full capacity. Table 3 illustrates “typical” Daily Traffic Capacity Estimates for LOS D conditions for various types of roadways.

Table 3: Level of Service (LOS) D “Typical” Daily Traffic Capacity Estimates

Suburban				Rural				Urban / CBD (Central Business District)			
Travel Lanes	Freeway	Arterial	Collector	Travel Lanes	Freeway	Arterial	Collector	Travel Lanes	Freeway	Arterial	Collector
2	NA	11,500	10,500	2	NA	15,500	9,500	2	NA	10,000	9,000
3	NA	13,000	11,500	3	NA	16,500	10,500	3	NA	14,000	12,500
4	70,000	29,000	22,500	4	63,000	26,000	20,500	4	73,000	26,000	19,000
5	NA	30,500	25,000	5	NA	28,000	22,500	5	NA	32,500	26,000
6	110,000	40,500	NA	6	91,000	39,000	NA	6	116,000	40,500	NA
7	NA	46,000	NA	7	NA	42,000	NA	7	NA	49,000	NA
8	146,000	NA	NA	8	NA	NA	NA	8	154,000	NA	NA

Source: Horrocks Engineers

As previously shown, Syracuse Road carries an average 18,000 vehicles per day, which is well above the capacity of a two-lane suburban arterial road. Therefore, Syracuse Road would be classified as operating at LOS F which is considered unacceptable.

Typically background traffic volumes on roadways are highest in suburban areas on weekdays during the PM peak travel period as commuter traffic is present in high volumes. Existing weekday PM peak period counts were obtained from counts collected by Horrocks Engineers in April 2004 between the hours of 5:00 and 7:00 pm. In this analysis, LOS conditions were calculated using the software package *Synchro* and *SimTraffic*. While *Synchro* basis all LOS analysis on HCM capacities and definitions, *SimTraffic* provides a simulation for the street network, which further analyzes the intersections and street network based on the interaction of vehicles from adjacent intersections. Table 4 illustrates the existing LOS conditions for all of the study intersections along Syracuse Road between and including 1000 West and 2000 West, based on existing PM peak hour traffic counts obtained by Horrocks Engineers in April 2004.

Table 4: Existing PM Peak Hour LOS Operational Analysis Summary

Intersection	Existing Conditions	
	Delay (seconds)	LOS
1000 West/Syracuse Road	47	D
1100 West/Syracuse Road	26*	D
1250 West/Syracuse Road	61*	F
Marilyn Drive/Syracuse Road	21*	C
Allison Way/Syracuse Road	22*	C
Banbury Drive/Syracuse Road	28*	D
Heritage Lane/Syracuse Road	16*	C
2000 West/Syracuse Road	20	C

Source: Traffic analysis software, *SimTraffic* vs 6, 2003 (rounded to nearest second).

* Delay and LOS for the approach with the highest delay value.

Utah Transit Authority (UTA) provides bus transit service along Syracuse Road from 2000 West to I-15. A transit stop is located at the intersection of Syracuse Road and 2000 West providing service every hour on weekdays from about 6:30 am to 6:30 pm.

D. 2030 Projections

Planning for the Syracuse Road improvements began as part of the Wasatch Front Regional Council's (WFRC) regional planning efforts for the Ogden urbanized area. Working cooperatively with UDOT and local agencies, WFRC has conducted regional transportation planning and has developed and maintained a long-range transportation plan for the Ogden area, including Davis and Weber Counties, since 1969.

This plan is based on comprehensive, area-wide transportation systems analysis and addresses all modes of transportation, including highways, transit, trucking, rail, and air, and is consistent with federal law.

The latest WFRC Long Range Plan (2001-2030) identifies the need for corridor improvements on this segment of Syracuse Road by 2012. The plan classifies Syracuse Road as a Minor Arterial and discusses improvements to increase vehicular capacity as well as accommodate bicycle travel. Capacity improvements to Syracuse Road are also recommended in the Syracuse Master Transportation Plan (1997).

Syracuse Road is part of the State Highway system, designated as Route Number 108. UDOT has recognized the role of Syracuse Road in the regional transportation system and the need to make improvements along the corridor by including Syracuse Road on the Statewide Transportation Improvement Program (STIP). The STIP has programmed improvements to the corridor to begin as early as 2004. The segment of Syracuse Road east of 1000 West to the interchange with I-15 has recently finished being constructed to five lanes.

Syracuse Road has been functionally classified as an arterial street and provides important access to northwestern Davis County and is the only arterial serving this area. With its connection with I-15 on the east it provides the main transportation corridor for access from residential areas in Syracuse, Clinton, and West Point to the commercial and employment areas along the I-15 corridor and the Salt Lake City and Ogden City areas. As the only road serving Antelope Island State Park, to the west, it provides access to this significant recreation resource.

There are no other adjacent arterial streets that serve this area of Davis County. Gentile Street, 2700 South, and 300 North are collectors that provide access to this growing area, but each must use connecting streets for access to I-15.

Future minor arterials are included in WFRC's LRP at 200 South (2004 – 2012 time period) and Hill Field Road extension to 500 West (2013 – 2022 time period). These facilities will help provide additional needed capacity as the area continues to develop, but Syracuse Road will remain the dominant transportation facility serving this growing area.

The Legacy Parkway, a principal arterial, is also planned to serve this area of Davis County. Construction is planned from I-15 at Farmington to Gentile Street between 2004 and 2012, from Syracuse Road to the Weber County Line between 2013 and 2022, and from Gentile Street to Syracuse Road between 2023 and 2030.

Future (2030) daily traffic projections were determined using land use and projected daily traffic volumes obtained from the WFRC regional travel demand model (version 4.0) for the year 2030. Figure 3 shows the 2030 daily traffic projections for the study roadway and the adjacent roadway network. Syracuse Road is projected to carry an average 30,000 vehicles per day between 1000 West and 2000 West.

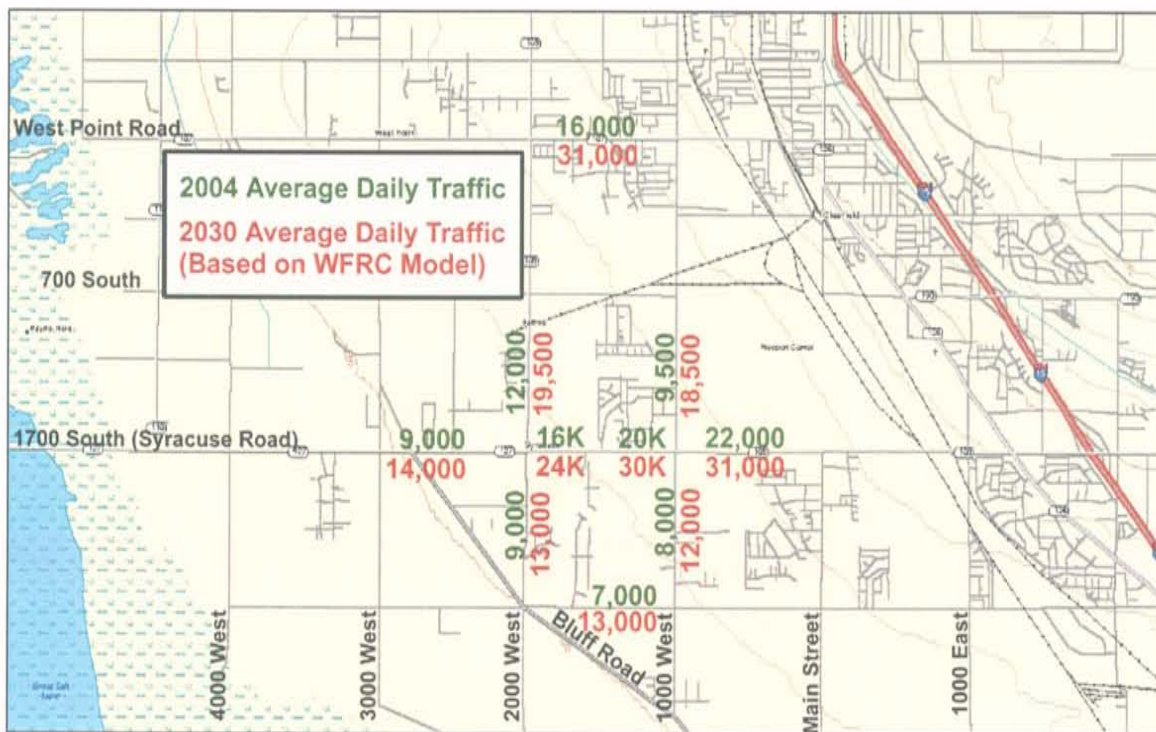


Figure 3 - Projected 2030 Average Daily Traffic Volumes

E. Alternatives Evaluation

For the evaluation of alternatives it is important to understand the difference between travel demand and traffic volume forecasts. Travel Demand is basically the amount of travel a person or persons use based on the type of travel (ie automobile, bus, car-pool, etc.), the cost of the travel including both travel-time and out-of-pocket costs, and the location of the destination, whether it be for work, pleasure, or any other reason. Traffic volumes are the resulting number of vehicles, including automobiles, motorcycles, trucks, buses and recreational vehicles that use a roadway based on motorists travel demand and the ability and/or capacity of the roadway to serve the motorists.

The capacity of a roadway is set based on the physical conditions, i.e. number of travel lanes, traffic signals at set locations, etc., for the roadway. If projected traffic volumes are less than the capacity of the roadway the roadway is considered to operate at acceptable level of service conditions and therefore capable of serving the motorists travel demand. If traffic volumes begin to approach the set capacity of the roadway, considered to be LOS E “threshold” volumes, the LOS conditions become less desirable, resulting in congestion and increased travel delay for the motorist. If another roadway will also serve the travel demand for the motorist, the motorist may reroute to that roadway causing a decrease in the travel demand for the first roadway. However, if the roadway is the only facility capable of serving the motorist’s needs or travel demand, then the motorist will accept the undesirable or failing, LOS F, conditions causing projected traffic volumes for the roadway to exceed the actual capacity of the roadway. Again, as previously mentioned, LOS D conditions are considered acceptable for suburban areas.

As described previously, the traffic analysis evaluated the study area under 2030 LOS D traffic conditions for the following scenarios:

1. No Action or no roadway improvements
2. Transportation Systems Management (TSM) improvements
3. Transit improvements
4. Improving Syracuse Road to three-lanes
5. Improving Syracuse Road to five-lanes
 - a. On-Corridor Alignment
 - b. Off-Corridor Alignment
 - i. Shifted 275 feet south
 - ii. Shifted 600 feet south
6. Improving Syracuse Road to seven-lanes
7. Improving adjacent parallel roadways to five-lanes

1. No Action or No Roadway Improvements

This alternative assumes that the study roadway remains a two-lane section. The projected travel demand, for this study section of Syracuse Road under this scenario, results in daily traffic

volumes of about 20,000 vehicles. The projected daily volumes would exceed the expected capacity of about 12,000 vehicles per day for the two-lane roadway, resulting in failing, LOS F, conditions.

2. TSM Improvements

This alternative assumes that the study area is enhanced with TSM improvements (i.e., signal coordination, left and right-turn pockets, car-pooling, etc.). With the installation of TSM improvements the roadway capacity is expected to increase by about 1,000 vehicles per day. The expected 2030 traffic volumes anticipated to use the roadway under this scenario would be about 21,000 vehicles per day, which would exceed the capacity of the two-lane roadway, about 12,000 vehicles per day, resulting in failing, LOS F, conditions.

3. Transit Improvements

This alternative assumes that the study area is enhanced with Transit improvements. With the current and future configuration of the transportation network in study area, the only practical or feasible improvements for transit would be enhanced transit bus service, including more frequent and available bus service. Other modes of transit such as commuter rail, light-rail, or bus rapid transit would not be feasible and are not compatible with UTA's Long-range Transit Plan.

Enhanced transit service would result in increased bus ridership, but is not expected to provide a significant reduction in vehicles along Syracuse Road. Any reduction in vehicles by the increased transit ridership would be replaced by the latent demand to use Syracuse Road. An increased transit ridership of 10% would therefore result in projected 2030 traffic volumes of about 21,000 vehicles per day on Syracuse Road. The expected 21,000 vehicles per day under this scenario would exceed the capacity of a two-lane road, about 12,000 vehicles per day, resulting in failing, LOS F, conditions.

4. Improving Syracuse Road to Three-Lanes

This alternative assumes that the study area is enhanced with TSM and Transit improvements, and Syracuse Road is improved to a three-lane roadway, including one through travel lane in each direction and a center two-way left-turn lane (TWLTL). As an improved three-lane roadway, Syracuse Road would be expected to have a capacity of about 13,500 vehicles per day. The projected 2030 traffic volume for this scenario is about 25,000 vehicles per day. With the three-lane improvements, and enhanced transit and TSM improvements, the projected 2030 traffic volumes for Syracuse Road, would be beyond the capacity of a three-lane road, resulting in failing, LOS F, conditions.

5. Improving Syracuse Road to Five-Lanes

This alternative assumes that the study area is enhanced with TSM and Transit improvements, and Syracuse Road is improved to a five-lane roadway, including two through travel lanes in

each direction and a center TWLTL. As an improved five-lane roadway, Syracuse Road would be expected to have a capacity of about 30,500 vehicles per day. The projected 2030 traffic volume under this scenario is about 30,000 vehicles per day. With the five-lane improvements, and enhanced transit and TSM improvements, the anticipated 2030 traffic volumes on Syracuse Road would be within the capacity of a five-lane road, resulting in LOS B or better operating conditions.

Two alignments were considered for this five-lane alternative; a) an on-corridor alignment where the roadway is improved to either side of the existing location, and b) an off-corridor alignment where part of the roadway is moved to a new location. The off-corridor alignment was evaluated with the roadway turning south near the 1100 West intersection and coming to a parallel with the existing roadway before turning north and reconnecting with the existing corridor just east of the Banbury Drive intersection. The existing roadways of 1250 West and Allison Way connecting with the existing Syracuse Road corridor would be disconnected with access only being allowed to and from the old corridor/roadway via Marilyn Drive. This off-corridor alignment was also evaluated under two scenarios including; i) the parallel roadway section shifted approximately 275 feet to the south of the existing roadway, ii) and at approximately 600 feet to the south of the existing roadway. Table 5 illustrates the LOS analysis results for the study intersections between 1000 West and 2000 West on Syracuse Road with the roadway improved to five lanes, and the study area enhanced with TSM and Transit improvements.

Table 5: 2030 PM Peak Hour 5-Lane LOS Operational Analysis Summary

Intersection	a. Existing Alignment		b. i. Shifted 275 Feet South		b. ii. Shifted 600 Feet South	
	Delay (seconds)	LOS	Delay (seconds)	LOS	Delay (seconds)	LOS
1000 West/Syracuse Road	39	D	42	D	40	D
1100 West/Syracuse Road	32*	D	24*	C	22*	C
1250 West/Syracuse Road	73*	F	-	-	-	-
Marilyn Drive/1700 South	-	-	22*	C	18*	C
Marilyn Drive/Syracuse Road	33	C	29	C	30	C
Allison Way/Syracuse Road	29*	D	-	-	-	-
Banbury Drive/Syracuse Road	43*	E	26*	D	30*	D
Heritage Lane	48*	E	59*	F	49*	E
2000 West	46	D	47	D	51	D

Source: Traffic analysis software, *SimTraffic* vs 6, 2003 (rounded to nearest second).

* Delay and LOS for the approach with the highest delay value.

Table 5 illustrates that all of the signalized intersections and most of the unsignalized intersections operate at LOS D or better conditions with any of the five-lane scenarios. As LOS conditions worsen at unsignalized intersections, traffic patterns will change as motorists reroute to find less congested unsignalized intersections or signalized intersections that will provide them easier access to Syracuse Road.

In the off-corridor alignment analysis, the existing unsignalized intersections at 1250 West and Allison Way were assumed to be disconnected from Syracuse Road. The disconnect of the two unsignalized intersections allowed for faster travel speeds along the corridor resulting in better travel conditions for the most part with only a slight increase in delay at the signalized intersections. However, the slight improvement in operational conditions with the off-corridor alignment will provide less benefit due to increased construction costs.

Another assumption made in this analysis included 1000 West as a three-lane collector both north and south of Syracuse Road. While the analysis indicates that signal timing adjustments at the 1000 West intersection assist in improving the LOS conditions on Syracuse Road, the LOS conditions on 1000 West would be considered unacceptable. If 1000 West were improved to a four-lane roadway, both north and south of Syracuse Road, LOS conditions on 1000 West would improve to acceptable levels. It was also assumed in this analysis that 2000 West would be a five lane arterial north of Syracuse Road and a three-lane collector to the south. The analysis indicates that these lane configurations for the 2000 West roadway will allow the roadway to function at acceptable LOS conditions.

6. Improving Syracuse Road to Seven-Lanes

This alternative assumes that the study area is enhanced with TSM and Transit improvements, and Syracuse Road is improved to a seven-lane roadway, including three through travel lanes in each direction and a center TWLTL. As an improved seven-lane roadway, Syracuse Road would be expected to have a capacity of about 46,000 vehicles per day. The projected 2030 traffic volumes under this scenario would be about 30,000 vehicles per day. With seven-lane improvements, and enhanced transit and TSM improvements, the projected 2030 traffic volumes on Syracuse Road would be within the capacity of a seven-lane road and expected to operate at LOS B or better conditions. Table 6 illustrates the anticipated LOS conditions for each study intersection along Syracuse Road between 1000 West and 2000 West with the roadway constructed to seven lanes.

Table 6: 2030 Seven-Lane PM Peak Hour LOS Operational Analysis Summary

Intersection	Seven Lanes	
	Delay (seconds)	LOS
1000 West/Syracuse Road	39	D
1100 West/Syracuse Road	25*	D
1250 West/Syracuse Road	19*	C
Marilyn Drive/Syracuse Road	37	D
Allison Way/Syracuse Road	23*	C
Banbury Drive/Syracuse Road	20*	C
Heritage Lane/Syracuse Road	35*	D
2000 West/Syracuse Road	52	D

Source: Traffic analysis software, *SimTraffic* vs 6, 2003 (rounded to nearest second).

* Delay and LOS for the approach with the highest delay value.

Table 6 illustrates that all of the study intersections are expected to operate at LOS D or better conditions during the PM peak traffic period. However, the LOS improvements would be considered minimal when compared to the LOS conditions for the five-lane alternatives in Table 5. Constructing Syracuse Road to seven-lanes therefore is a costly improvement that would not provide enough benefit to warrant further study at this time for this section of the corridor.

7. Improving Adjacent Parallel Roadways to Five-Lanes

This alternative assumes that the study area is enhanced with TSM and Transit improvements, and Syracuse Road remains a two-lane roadway while the adjacent east/west corridors to the north and south are improved to five-lane roadways (i.e., West Point Road and Gordon Avenue). As a two-lane roadway, Syracuse Road would be expected to have a capacity of 12,000 vehicles per day. The projected 2030 traffic volume under this scenario is about 21,000 vehicles per day on Syracuse Road. With the two-lane Syracuse Road, five-lane corridors to the north and south of Syracuse Road, and enhanced transit and TSM improvements, the projected 2030 traffic volumes for this study section of Syracuse Road would be beyond the capacity of a two-lane road, about 12,000 vehicles per day, resulting in failing, LOS F, conditions.

Table 7 summarizes the seven transportation alternatives comparing the capacity and projected 2030 traffic volumes for Syracuse Road. The projected 2030 traffic volumes exceed the capacity for Syracuse Road in all of the alternatives except Alternatives 5 (five-lane corridor) and 6 (seven-lane corridor). The projected 2030 LOS conditions based on the anticipated traffic volumes under each scenario are also included in Table 7.

Table 7 - Transportation Alternative Summary

No.	Alternative	Syracuse Road LOS D Traffic Capacity (vehicles per day)	Syracuse Road Year 2030 Projected Traffic Volumes (vehicles per day)	Projected 2030 LOS Conditions
1	No-action	11,500	20,000	F
2	TSM Improvements	12,000	21,000	F
3	Transit Improvements	12,000	21,000	F
4	Three-Lanes*	13,500	25,000	F
5	Five-Lanes*	30,500	30,000	D
6	Seven-Lanes*	46,000	30,000	A/B
7	Parallel Roadways Five-Lanes*	12,000	21,000	F

* Includes TSM and Transit Improvements

F. Findings and Recommendations

The results of the traffic analysis show that Syracuse Road (from 1000 West to 2000 West) needs to be improved under existing (2004) conditions and future (2030) projections. The improvements that provide the corridor with the needed capacity and safety, while maintaining acceptable LOS conditions includes re-constructing Syracuse Road to five-lanes, including two through travel lanes in each direction and a center TWLTL, and with enhanced TSM and Transit improvements (Alternative 5).

Alternative 6, the seven-lane section, provides for the needed capacity; however, the seven-lane section is not needed to accommodate projected 2030 traffic volumes. All of the other alternatives (Alternatives 1, 2, 3, 4, and 7) do not provide for the needed capacity and safety in the study corridor, resulting in failing, LOS F, conditions.